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EXAMINER	
CHEN, JUNPENG	
ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,501	CATHELIN, PHILIPPE	
	Examiner	Art Unit	
	JUNPENG CHEN	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,15-18 and 25-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12, 15-18 and 25-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to amendments/arguments filed on 03/14/2008 and 01/15/2008. The arguments with mapping between the claims and specification shows support for the claims. Therefore, the finality of the previous Office action is hereby withdrawn. Applicant's submission after final filed on 03/14/2008 has been entered. Claims 13, 14 and 19-24 have been canceled. Currently, claims 1-12, 15-18 and 25-31 are pending. This action is made Non-Final.

Claim Objections

2. **Claims 1, 2-6, 7, 30 and 31** are objected to because of the following informalities:

a) On **line 4** of **claim 1**, replace "the" with --a-- after "on";

b) On **lines 8 and 9** of **claim 1**, insert –voltage-controlled-- before "auxiliary"; each of claims 2 and 26 contains a similar problem;

c) On **lines 9, 13 and 14** of **claim 1**, insert --phase locked-- after "main"; each of claims 2, 3 and 25 contains a similar problem;

d) On **lines 10 and 11** of **claim 1**, insert --local-- before "main"; each of claims 25 and 28 contains a similar problem;

e) On **line 2** of **claim 2**, insert --phase locked-- after "auxiliary"; claim 26 contains a similar problem;

f) On **line 1** of each of **claims 2-6**, insert --radio frequency-- before "device"; each of claims 26-30 contains a similar problem;

g) On **line 2** of **claim 7**, replace “a device” with –the radio frequency device-- after “incorporates”;

h) On **line 2** of **claim 30**, replace “said electronic chip” with –said integrated circuit chip;

i) On **line 1** of **claim 31**, insert --circuit-- before “oscillator”;

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7, 8 and 30 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Each of claims 7, 8 and 30 recites limitation "it is". However, Applicant fails to clearly define what "it" is.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 9-12, 15-18, 25-28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kasperkovitz** et al. (U.S. Patent 6,665,523 B1) in view of prior art admission by Applicant (**PAAA**).

Consider **claim 9**, Kasperkovitz discloses a local oscillator circuit, comprising: a first phase lock loop receiving a first reference signal and incorporating a first voltage controlled oscillator which generates a second reference signal (read as the PLL comprising VCO, Ntune, PFD2 and LPF2, having reference frequency Fref, and output Ssf, Figure 5, col. 5 with line 22 to col. 6 with line 65) and a second phase lock loop receiving the second reference signal and incorporating a second voltage controlled oscillator which generates a local oscillator output signal (read as LOOP with input Ssf and output to the MIX, Figure 5);

the second reference signal frequency being at least 10 times the frequency spacing of the channels of the RF signal reduced to a frequency of the local oscillator output signal output from the second voltage controlled oscillator (read as 237.5 MHz >

1MHz * 10), and is removed from a frequency which is a whole integer multiple of the RF signal frequency, and wherein a frequency spacing between the second reference signal of the second phase lock loop and a whole integer multiple of the RF signal is at least a cut-off frequency of the second phase lock loop (read as 237.5 MHz is far from 950 MHz or multiples thereof);

wherein the first reference signal has a frequency equal to a frequency spacing of channels of an RF signal generated from the local oscillator output signal, if a frequency of the local oscillator output signal were reduced to a frequency of the second reference signal (read as, i.e. Fref=250kHz, is equals to 1MHz/Nband= 1MHz/4 = 250kHz, col. 6 with lines 36-65).

However, Kasperkovitz does not specifically disclose wherein a spacing between the first reference frequency of the main loop and a whole integer multiple of the transmit or receive frequency is at least the cut-off frequency of the main loop.

Nonetheless, in related art, PAAA discloses that for reasons of stability, the cut-off frequency is less than a tenth of the reference frequency of the loop, paragraph [17] of the current specification on page 5.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of PAAA into the teachings of Kasperkovitz for the purpose of obtaining stability of the loop (i.e. cut-off frequency = 237.5 MHz / 10 = 23.75 MHz, which is less than 712.5 MHz (950 MHz - 237.5 MHz)), with the teachings of all apparatus elements and their functions as claimed, the VCO would inherently operate at a frequency for Ssf which is in a non-

contaminated zone with respect to operation of the CCO and is thus not subject to being perturbed.

Consider **claim 10, as applied to claim 9 above**, Kasperkovitz, as modified by PAAA, discloses wherein the second reference signal has a frequency that is less than a frequency of the local oscillator output signal and the first reference signal has a frequency that is less than the second reference signal (read as Fref, Ssf and the output of CCO, Figure 5).

Consider **claims 11 and 12, as applied to claim 10 above**, Kasperkovitz, as modified by PAAA, discloses wherein the second reference signal frequency is greater than N times the first reference signal as in claim 11 and wherein N equals ten as in claim 12 (read as i.e. 237.5MH > 250kHz * 10, Figure 5, col. 6 with lines 36-65).

Consider **claim 15, as applied to claim 9 above**, Kasperkovitz, as modified by PAAA, discloses wherein the non-contaminated zone is frequencies which are not harmonics or mixes of useful signals (read as with teachings of all apparatus elements and their functions as claimed, frequencies are inherently not harmonics or mixes of useful signals).

Consider **claims 16 and 17, as applied to claim 11 above**, Kasperkovitz, as modified by PAAA, discloses wherein the second reference signal frequency is greater than 1/M of the local oscillator output signal frequency as in claim 16 and wherein M is twenty as in claim 17 (read as, i.e. 237.5MHz > 950Mhz/20, Figure 5, col. 6 with lines 36-65).

Consider **claim 18, as applied to claim 11 above**, Kasperkovitz, as modified by PAAA, discloses wherein the second reference signal is large enough to sharply reduce an effect of pulling as to the second voltage controlled oscillator (read as 237.5MHz is greater than 1MHz).

Consider **claim 31, as applied to claim 9 above**, Kasperkovitz, as modified by PAAA, discloses wherein the second reference signal has a frequency which is an integer multiple of a cut-off frequency of the second phase lock loop (read as, i.e. cut-off frequency is 23.75 MHz, which is the result of = 237.5 MHz / 10).

Consider **claim 25**, Kasperkovitz discloses A radio frequency device having a null or quasi-null intermediate frequency, intended to receive or transmit a radio frequency signal having a frequency that is part of a frequency range subdivided into frequency channels (read as the receiver, Figures 5, col. 5 with line 22 to col. 6 with line 65), comprising:

a frequency transposition mixer (read as MIX, Figure 5);

a local main oscillator connected to the mixer (read as CCO connects to MIX, Figure 5);

a main phase locked loop incorporating the main oscillator (VCOP) receiving a first reference frequency (read as the LOOP in Figure 5);

a voltage-controlled auxiliary oscillator (VCOA) supplying the first reference frequency (read as signal Ssf and VCO, Figure 5); and

an auxiliary phase locked loop incorporating the voltage controlled auxiliary oscillator receiving a second reference frequency (read as the PLL comprising VCO, N_{tune}, PFD2 and LPF2, having reference signal Fref, Figure 5);

wherein the second reference frequency is less than the first reference frequency (read as, i.e. if Nband is 4, Fref has frequency of 250kHz, is less than the frequency of Ssf, which is between 237.5 MHz – 307 MHz, col. 6 with lines 36-65); and

wherein the first reference frequency is less than an output frequency of the local main oscillator (read as, i.e. 237.5 MHz < 950 MHz), is greater than ten times a spacing of the frequency channels reduced to the output frequency of the main oscillator (read as 237.5 MHz > 1MHz * 10), and is removed from a frequency which is a whole integer multiple of the frequency for the radio frequency signal (read as 237.5 MHz is far from 950 MHz or multiples thereof).

However, Kasperkovitz does not specifically disclose wherein a spacing between the first reference frequency of the main loop and a whole integer multiple of the transmit or receive frequency is at least the cut-off frequency of the main loop.

Nonetheless, in related art, PAAA discloses that for reasons of stability, the cut-off frequency is less than a tenth of the reference frequency of the loop, paragraph [17] of the current specification on page 5.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of PAAA into the teachings of Kasperkovitz for the purpose of obtaining stability of the loop (i.e. cut-off

frequency = 237.5 MHz / 10 = 23.75 MHz, which is less than 712.5 MHz (950 MHz - 237.5 MHz)).

Consider **claim 26, as applied to claim 25 above**, Kasperkovitz, as modified by PAAA, discloses wherein the auxiliary phase locked loop comprises a whole divider and in that the second reference frequency of the auxiliary loop is less than or equal to the spacing of the frequency channels if the radio frequency signal for such spacing were reduced to the first reference frequency (read as Fref, Ssf and the output of CCO, Figure 5).

Consider **claim 27, as applied to claim 25 above**, Kasperkovitz, as modified by PAAA, discloses wherein the first reference frequency of the main phase locked loop is greater than a twentieth of the output frequency of the local main oscillator (read as, i.e. 237.5MHz > 950Mhz/20, Figure 5, col. 6 with lines 36-65).

Consider **claim 28, as applied to claim 25 above**, Kasperkovitz, as modified by PAAA, discloses wherein the claimed invention above and wherein the range of frequencies to which the send or receive frequency belongs is in the vicinity of 900 MHz or 1800 MHz (corresponding to the GSM or DCS standard) (operating frequency range is between 950 MHz and 2150 MHz, col. 6 with lines 36-65), but does not specifically disclose the first reference frequency is about 450 MHz, and the second reference frequency is about 50 kHz.

However, Kasperkovitz discloses and shows several different examples by selecting different division factors of Nband and Ntune, Table in col. 6.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to select different division factors of Nband and Ntune, to obtain a similar same result as claimed, as it is just a matter of design choice to select different division factors of Nband and Ntune.

Claims 1-8, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kasperkovitz** et al. (U.S. Patent 6,665,523 B1) in view of prior art admission by Applicant (**PAAA**), and in further view of **Vaucher** C et al: "A wide-band tuning system for fully integrated satellite receivers" IEEE Inc. New York, US, Vol. 33, no. 7, 07-1998, pages 987-997.

Consider **claim 1**, Kasperkovitz discloses a radio frequency device having a null or quasi-null intermediate frequency, intended to receive or transmit a radio frequency signal whereof the transmit or receive frequency is part of a frequency range subdivided into frequency channels (read as the receiver, Figures 5, col. 5 with line 22 to col. 6 with line 65), wherein it comprises frequency transposition means connected to a local main oscillator (read as CCO connects to MIX, Figure 5), and in that the main local oscillator is incorporated inside a main phase locked loop (read as the LOOP in Figure 5) receiving a first reference frequency that is supplied by a voltage-controlled auxiliary oscillator (read as signal Ssf and VCO, Figure 5), itself incorporated into an auxiliary phase locked loop receiving a second reference frequency (read as the PLL comprising VCO, N_{tune}, PFD2 and LPF2, having reference signal Fref, Figure 5) that is less than the first reference frequency output from the auxiliary oscillator (read as, i.e. if Nband is 4,

Fref has frequency of 250kHz, is less than the frequency of Ssf, which is between 237.5 MHz – 307 MHz, col. 6 with lines 36-65), wherein the first reference frequency of the main loop is a) less than the output frequency of the main oscillator (read as, i.e. 237.5 MHz < 950 MHz), b) greater than 10 times the frequency spacing of the frequency channels reduced to the output frequency of the main oscillator (read as 237.5 MHz > 1MHz * 10), and c) removed from a frequency which is a whole integer multiple of the transmit or receive frequency (read as 237.5 MHz is far from 950 MHz or multiples thereof).

However, Kasperkovitz does not specifically disclose wherein a spacing between the first reference frequency of the main loop and a whole integer multiple of the transmit or receive frequency is at least the cut-off frequency of the main loop.

Nonetheless, in related art, PAAA discloses that for reasons of stability, the cut-off frequency is less than a tenth of the reference frequency of the loop, paragraph [17] of the current specification on page 5.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of PAAA into the teachings of Kasperkovitz for the purpose of obtaining stability of the loop (i.e. cut-off frequency = 237.5 MHz / 10 = 23.75 MHz, which is less than 712.5 MHz (950 MHz - 237.5 MHz)).

However, Kasperkovitz, as modified by PAAA, still does not specifically discloses that the MIX and the LOOP is on the same electronic chip.

Nonetheless, in related art, Vaucher discloses a similar receiver, for cellular and cordless communication, that is fully integratable, comprising similar Mixers and Loop1 and Loop2, Figure 3, pages 987-989.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Vaucher into the teachings of Kasperkovitz, which modified by PAAA, for the purpose of reducing the receiver size of a cellular device.

Consider **claim 2, as applied to claim 1 above**, Kasperkovitz, as modified by PAAA and Vaucher, discloses wherein the auxiliary loop comprises a whole divider and in that the reference frequency of the auxiliary loop is less than or equal to, preferably equal to, the frequency spacing of the frequency channels if the transmit or receive frequency for such frequency spacing were reduced to the first reference frequency of the main loop (read as, i.e. Fref=250kHz, is equals to 1MHz/Nband= 1MHz/4 = 250kHz, col. 6 with lines 36-65).

Consider **claim 3, as applied to claim 1 above**, Kasperkovitz, as modified by PAAA and Vaucher, discloses wherein the first reference frequency of the main loop is greater than a twentieth of the output frequency of the main oscillator (read as, i.e. 237.5MHz > 47.5 MHz, the result of 950MHz/20, col. 6 with lines 36-65).

Consider **claim 4, as applied to claim 1 above**, Kasperkovitz, as modified by PAAA and Vaucher, discloses wherein the claimed invention above and wherein the range of frequencies to which the send or receive frequency belongs is in the vicinity of 900 MHz or 1800 MHz (corresponding to the GSM or DCS standard) (operating

frequency range is between 950 MHz and 2150 MHz, col. 6 with lines 36-65), but does not specifically disclose the first reference frequency of the main loop being equal to 450 MHz, whereas the second reference frequency of the auxiliary loop is equal to 50 kHz.

However, Kasperkovitz discloses and shows several different examples by selecting different division factors of Nband and Ntune, Table in col. 6.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to select different division factors of Nband and Ntune, to obtain a similar same result as claimed, as it is just a matter of design choice to select different division factors of Nband and Ntune.

Consider **claim 5, as applied to claim 1 above**, Kasperkovitz, as modified by PAAA and Vaucher, discloses wherein the electronic chip also comprises the two phase locked loops (read as the receiver components of Figure 5 is fully integrated into the same chip to reduce size of the receiver).

Consider **claim 6, as applied to claim 5 above**, Kasperkovitz, as modified by PAAA and Vaucher, discloses wherein it is integrally produced on said electronic chip (read as the receiver components of Figure 5 is fully integrated into the same chip to reduce size of the receiver).

Consider **claims 7 and 8, as applied to claim 1 above**, Kasperkovitz, as modified by PAAA and Vaucher, discloses a wireless communication system incorporates a device as claimed in claim 1 as in claim 7 and it forms a cellular mobile

telephone (read as the receiver circuit is for cellular and cordless communication, Vaucher).

Consider **claims 29 and 30, as applied to claim 25 above**, Kasperkovitz, as modified by PAAA, discloses the claimed invention above but does not specifically disclose wherein the device is fabricated as an integrated circuit chip as in claim 29 and wherein it is integrally produced on said electronic chip as in claim 30 .

Nonetheless, in related art, Vaucher discloses a similar receiver, for cellular and cordless communication, that is fully integratable, comprising similar Mixers and Loop1 and Loop2, Figure 3, pages 987-989.

Therefore, it would have been obvious for a person with ordinary skill in the art at the time the invention was made to incorporate the teachings of Vaucher into the teachings of Kasperkovitz, which modified by PAAA, for the purpose of reducing the receiver size of a cellular device.

Conclusion

7. Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junpeng Chen whose telephone number is (571) 270-1112. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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/Edward Urban/

Supervisory Patent Examiner, Art Unit 2618